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12312

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PROCEEDINGS AT THE MEETINGS OF THE PHYSICAL SOCIETY

SESSION 1943–44

12 *May* 1943*

The twelfth meeting of THE COLOUR GROUP, at the Lighting Service Bureau, Savoy Hill, London W.C. 2, Mr. J. Guild being in the Chair.

A lecture entitled " Sixty years of colorimetry " was delivered by G. S. Fawcett, and was followed by an informal discussion.

* The record of this meeting was inadvertently omitted from the *Proceedings*, vol. 55, page ix (November, 1943).

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9 *September* 1943

The thirteenth meeting of THE COLOUR GROUP, at the Science Museum, London S.W. 7 Mr. J. Guild being in the Chair.

A lecture entitled " A review of the theory of colour photography " was delivered by J. B. Reid, B.Sc., and was followed by an informal discussion.

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17 *September* 1943

The ninth meeting of THE OPTICAL GROUP, at the National Institute for Medical Research, London N.W. 3, Professor A. O. Rankine being in the Chair.

Demonstrations of the electron microscope and other apparatus were given, after introductory talks, by F. W. Cuckow, J. Smiles and R. G. McFarlane on the electron microscope and its uses in biological research, and by J. W. Perry on the Tiselius electrophoresis apparatus.

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15 *October* 1943

Science Meeting, at the Royal Institution, Albemarle Street, London W. 1, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship: Thomas Crowdy, John Robert Mills, Marion Morris, Ronald Bradley Shepherd, Robert Simpson Silver.

The eighth Parsons Memorial lecture was delivered by the Right Hon. Lord Rayleigh, D.Sc., Sc.D., LL.D., F.R.S., who took as his subject " Optical topics, in part connected with Charles Parsons ".

---

5 *November* 1943

Science Meeting, at the Imperial College, London S.W. 7, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship: Norman Clarke, John Rupert Davy, Dennis Gabor, Edward Albert James Hall.

It was announced that the Council had elected the following to Student Membership: Alan Barker, Antony Harley Boston, James Macdonald Cassels, Philip Lanyon Chirgwin, Dennis Alan Coster, David V. Crawford, James Maurice Daniels, Michael Davis, Denis Thomas Richard Dighton, James Wynne Dungey, Desmond J. A. Mansell, Geoffrey Harwood Moss, Ralph William Nicholls, James Nicol, Patrick John Oram, Norman Edward Rider, D. E. U. Ridout, Douglas Yeo.

A lecture on " The non-destructive testing of metallic components " was delivered by Bruce Chalmers, D.Sc., Ph.D., and was followed by an informal discussion.

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10 *November* 1943

The fourteenth meeting of THE COLOUR GROUP, held jointly with the Technical Section of the Paper Makers' Association of Great Britain and Ireland, at the Lighting Service Bureau, Savoy Hill, London W.C. 2, Mr. J. Guild being in the Chair.

A paper on " Colour measurement for control and research in paper making " was presented by S. R. H. Edge, M.A., and Miss H. M. McKenzie, B.Sc., and was followed by an informal discussion.

---

19 *November* 1943

The tenth meeting of THE OPTICAL GROUP, at the Imperial College, London S.W. 7, Professor A. O. Rankine being in the Chair. A discussion on the " Measurement of aberrations, with special reference to photographic lenses ", was opened by T. Smith, M.A., F.R.S., papers and notes being contributed by H. K. Bourne, J. Home Dickson, J. W. Hasselkus, H. H. Hopkins, L. C. Martin, C. A. Padgham, J. W. Parry, E. W. H. Selwyn and C. G. Wynne.

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26 *November* 1943

Science Meeting, at the Imperial College, London S.W. 7, the President, Professor E. N. da C. Andrade, being in the Chair.

William John Meredith and John Yarwood were elected to Fellowship.

A lecture entitled " A survey of nuclear field theories " was delivered by H. T. Flint, D.Sc., Ph.D., and was followed by an informal discussion.

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17 *December* 1943

Science Meeting, at the Imperial College, London S.W. 7, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship : Sydney Eric Ashmore, Willem Hendrik van den Bos, Georgina Maxwell Dadds, Elemer Forbat, Cecil Francis Machin, Noel Percy Mallett, George Ramsay Nicholson, Marcus Laurence Elwin Oliphant, Bertram Samuel Page, Ivor Williams.

It was announced that the Council had elected the following to Student Membership : Peter Andrews, Ivan Bernard Brenton, Derek Edgar Charles Corbridge, Reginald John Corps, R. L. Cowley, James Henry Ellis, Norman Edward Goddard, Robert Louis Gordon, Ralph P. Hudson, Arthur Norman Hunter, Richard Stanley Ince, William Elder Lauder, David Rowland McCall, John Lewis Peake, Derek John Price, Xenia Iris Violet Sweeting, Guy Charles M. R. Tavernier, Kenneth John Veryard, Peter Stephen Williams.

The twentieth Duddell Medal was presented to Mr. John Guild in recognition of his invention, design and development of many optical instruments of outstanding merit.

The following demonstrations were given and were followed by an informal discussion :

" The spinning and floating of light bodies in an electric field : a development of an experiment by Sir Isaac Newton ", by Lord Rayleigh, Sc.D., LL.D., F.R.S. ;

" A machine for harmonic synthesis ", by A. Shilton, B.Sc. ;

" A new method of measuring the inclination of the Earth's magnetic field ", by E. P. Harrison, Ph.D., and Miss E. Hamilton Smith, M.A.

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26 *January* 1944

The fifteenth meeting of THE COLOUR GROUP, at the Imperial College, London S.W. 7, Mr. J. Guild being in the Chair.

A paper entitled " Some difficulties encountered in applying the theory of McAdam's limiting brightness to real dyestuffs " was read by T. Vickerstaff, M.Sc., Ph.D., and was followed by an informal discussion.

---

11 *February* 1944

Science Meeting, at the Imperial College, London S.W. 7, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship: Donald Robert Barber, William Barrow Bartley, Robert Blackadder Fisher, Alexander Rule Ingles, Frederick John Scrase.

It was announced that the Council had elected the following to Student Membership: Robert Bernard Clark, John Francis Irving Cole, Geoffrey Harvey Haggis, R. G. Lingard, Oliver Simpson, Ian Murray Watt.

An informal discussion on "Band spectra and energies of dissociation of diatomic molecules" was held, the contributors being R. F. Barrow, D.Phil., A. G. Gaydon, D.Sc., W. Jevons, D.Sc., R. C. Pankhurst, Ph.D., and R. W. B. Pearse, D.Sc.

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18 *February* 1944

The eleventh meeting of THE OPTICAL GROUP, at the Northampton Polytechnic, London E.C. 1, Professor A. O. Rankine being in the Chair.

The following papers were read and discussed:

"Some notes on space perception", by H. H. Emsley.

"Contact lenses", by K. Clifford Hall.

"A note on the treatment of a case of conical cornea by contact lens", by E. F. Fincham.

---

3 *March* 1944

Science Meeting, at the Imperial College, London S.W. 7, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship: Francis Henry Aldred*, James Graham Ballantyne*, Kathleen Virtue Ballington*, Kenneth Denny Barritt*, Ronald Percy Bell, Robert Berman*, John Weston Broadhurst*, Brian Harvey Chirgwin*, Maurice John Daintith*, Ernest William Emery*, James Mackenzie Falconer*, Ivan Oscar Fieldgate, Ernest John French*, Eileen Elsie Fuller*, Anthony James Hailwood, David Arthur Jones, Helen Dick Megaw, Derwent Mark Atkinson Mercer, Hans Oskar Puls, Richard Francis Yeoman Randall*, George Codling Richer, Dennis Parker Riley, William Raymond Shackcloth*, Harold A. B. Simons*, Thomas Anderson Straughan*, Robert Soulsby Tebble*, Derrick Michael Theaker, James Topping, Stephen Edelston Toulmin*, Philip Robert Tunnicliffe*, William Wilson, Malcolm Frank Wintle*, Peter Osborn Wymer*.

(* Transferred from Student Membership.)

It was announced that the Council had elected the following to Student Membership: Robert Guy Chambers, Ronald Henry Hall, Peter T. Landsberg, Denis Noel Layton, Martin Ludwig Loehr, Derek Hubert Mash.

An address on "Physics and the scientific instrument industry" was delivered by A. J. Philpot, O.B.E., M.A., B.Sc., and was followed by a discussion opened by F. Twyman, F.R.S.

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8 *March* 1944

The fifteenth meeting of THE COLOUR GROUP, at the Imperial College, London S.W. 7, Mr. G. S. Fawcett being in the Chair.

A paper entitled "The Sub-Committee on Colour Deficiency in Industry: A progress report" was read by J. H. Shaxby, D.Sc.

The meeting was preceded by the fourth *Annual General Meeting of the Colour Group* for the presentation of the Committee's report on the work of the Group in 1943–44 and the election of Officers and Committee for 1944–45.

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15 *March* 1944

Science Meeting, held jointly with the Plastics Group of the Society of Chemical Industry, at the London School of Hygiene and Tropical Medicine, London W.C. 1, the President, Professor E. N. da C. Andrade, being in the Chair.

A lecture on " X-ray examination of plastics " was delivered by W. T. Astbury, Sc.D., F.R.S., and was followed by an informal discussion.

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21 *April* 1944

The twelfth meeting of THE OPTICAL GROUP, at the Imperial College, London S.W. 7, Professor A. O. Rankine being in the Chair.

A lecture entitled " My fifty years in the optical industry " was delivered by J. W. Hasselkus, C.B.E.

The meeting was preceded by the third *Annual General Meeting of the Optical Group* for the presentation of the Committee's report on the work of the Group in 1943–44 and the election of Officers and Committee for 1944–45.

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26 *April* 1944

Science Meeting, at the Royal Institution, London W. 1, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship, the first three being transferred from Student Membership: Bernard Cyril Abbott, Patricia Mary Lord, Henry Vernon Walters, Hans Samuel Joachim, Eric Balliol Moullin, Oliver Graham Sutton.

It was announced that the Council had elected the following to Student Membership: Stanley Gill, Edward Peter Campbell Sington, Colin Henry Smith, Peter Anthony Tanner.

The twenty-eighth Guthrie Lecture was delivered by Professor J. H. Hildebrand, Sc.D., Ph.D., who took as his subject " The liquid state ".

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29 *April* 1944

Science Meeting, at the new Clarendon Laboratory, Oxford, the President, Professor E. N. da C. Andrade, being in the Chair.

Professor Hildebrand repeated the twenty-eighth Guthrie Lecture.

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24 *May* 1944

Annual General Meeting, at the Imperial College, London S.W. 7, the President, Professor E. N. da C. Andrade, being in the Chair.

The minutes of the previous Annual General Meeting were read and accepted as correct.

The reports of the Council and the Honorary Treasurer and the Annual Accounts for 1943 were adopted.

The Officers and Council and the Auditors for 1944–45 were elected.

Votes of thanks were accorded to the Rector and Governing Body of the Imperial College, the Managers of the Royal Institution, the Director of the Science Museum, and the Electric Lamp Manufacturers' Association for excellent accommodation at meetings, to the retiring Officers and Council, and to Professor A. F. C. Pollard for preparing the U.D.C. Index Slips for the *Proceedings*.

The meeting was followed by an *Extraordinary General Meeting* for the election of Academician Abram Feodorovich Joffé as an Honorary Fellow of the Society.

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24 *May* 1944

Science Meeting, at the Imperial College, London S.W. 7, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship: John Iball, Robert Elias Lloyd-Owen, Keith Burton Logie (transferred from Student Membership), Albert Lloyd George Rees, Bhrigunath Narayan Singh, Douglas Harold Tomlin.

It was announced that the Council had elected the following to Student Membership: Deryck Russell Bell, David Russell Bland, Peter Albert Michaels, R. V. Waterhouse.

A lecture on "Current problems in visual research" was delivered by W. S. Stiles, D.Sc., Ph.D., and was followed by an informal discussion.

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30 *May* 1944

A special meeting of THE OPTICAL GROUP, held jointly with the Scientific and Technical Group of the Royal Photographic Society, at 16 Prince's Gate, London S.W. 7 Professor A. O. Rankine being in the Chair.

E. R. Davies, B.Sc., presented for informal discussion an address entitled "Psychophysics and photography", by Dr. Loyd A. Jones of the Kodak Research Laboratories, Rochester, N.Y.

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7 *June* 1944

The seventeenth meeting of THE COLOUR GROUP, at the Royal Society of Arts, Adelphi, London W.C. 2, Mr. J. Guild being in the Chair.

A paper on "The Munsell System: a review of recent work carried out by a sub-committee of the Optical Society of America on the spacing of the Munsell Colours" was read by W. D. Wright, D.Sc., and was followed by an informal discussion.

REPORT OF COUNCIL FOR THE YEAR ENDED 31 DECEMBER 1943

INTRODUCTORY AND GENERAL

In spite of ever-tightening war-time restrictions and difficulties, the Society carried on its work with hardly any slackening of pace throughout the year now under review. The Science Meetings were satisfactorily attended ; the usual six Parts of the *Proceedings* appeared with but slight delays ; the ninth volume of the *Reports on Progress in Physics* was published towards the end of the year and is in very wide request ; the demand for earlier volumes of the *Reports* and for other publications has been very well maintained ; and the Colour and Optical Groups have again been conspicuously successful. It is gratifying to report a further growth of the membership, which stood well over 1300 at the end of the year and has continued to rise since then.

Although the costs of paper, of printing (the rates for which are now 54 per cent higher than in June 1939), and of all essential services have increased steadily during these years of war, no change has been made in the rates of Fellows' and Student Members' annual subscriptions, apart from the revision, foreshadowed in last year's Report of Council, of the scheme of reduced conjoint subscriptions payable through the Institute of Physics. In accordance with this revision the discount has been diminished from 15, 25 or 33⅓ per cent to a uniform 10 per cent in each case of Fellowship of two or more participating Societies, and it is satisfactory, though not surprising, that no word of complaint has reached the Officers and Council.

The situation immediately after the war is clearly one that demands the most careful consideration by the Officers and Council. Fellows are invited to co-operate by making a special and immediate effort to bring the advantages of Fellowship of the Society to the notice of their colleagues and the great privileges of Student Membership to their senior physics students. There is little doubt that the recent rate of increase of membership will be one of the factors taken into account when the future housing of learned societies comes under consideration. The Society's position was briefly stated by the President in the following letter, which appeared in *The Times* on 22 December 1943 :—

To the Editor of 'The Times'.

SIR : In his presidential address to the Royal Society, in which he dealt with the accommodation of the Royal Society and of the scientific societies in general, Sir Henry Dale said that, while the authorities of the 1870s did not see much future for chemistry, apparently they did not foresee any future for physics at all. No doubt he had in mind the Physical Society, which is at present housed, by courtesy of the Royal Commissioners for the Exhibition of 1851, in the top floors of what was a private house in Kensington, to which the only access is a forbidding flight of stairs. The Society is very grateful to the Royal Commissioners, who have always shown great kindness and consideration ; without this help the Society would be in grave difficulties. At the same time, in view of the services which the physicists of the country have rendered to the State, it may be contended that it has deserved some worthier accommodation.

The Society, which was founded in 1874, has increased its membership from about 100 in the early days to some 1350 at the moment, and it is growing rapidly. Among its past presidents it numbers Lord Kelvin, Balfour Stewart, G. F. Fitzgerald, Oliver Lodge, Arthur Schuster, J. J. Thomson, W. H. Bragg, Sir Arthur Eddington, Lord Rayleigh and Sir Charles Darwin. It would like to have a home of its own in a central position, near its great ancestor the Royal Society, and hopes that its demure virtues will not be neglected when the general question raised by Sir Henry Dale comes up for serious consideration.

I am, Sir,

E. N. DA C. ANDRADE,
President, Physical Society.

1 Lowther Gardens,
Exhibition Road S.W. 7
20 December 1943.

The Council wishes to record its thanks for hospitality extended to the Society and the two Groups during the year by the Rector and Governing Body of the Imperial College, by the Managers of the Royal Institution, by the Electric Lamp Manufacturers' Association, by the Director of the Science Museum, and by the Director of the National Institute for Medical Research. The thanks of the Society are also accorded to Professor A. F. C. Pollard for his continued expert help in the preparation of the Universal Decimal Classification Index Slips, which are supplied with the *Proceedings* to all who need them.

MEETINGS

An Annual General Meeting was held at the Royal Institution on 18 May 1943 for the presentation of the 1942 Reports of the Council and the Honorary Treasurer and for the election of the Officers and Council for 1943–44.

Nine Science meetings were held during the year: five at the Imperial College, three at the Royal Institution, and one at the Science Museum. Five of them were devoted to the special lectures reported in the following paragraphs, and two to "lecture-surveys" by Dr. Bruce Chalmers on "The Non-destructive Testing of Metallic Components" (*Proceedings*, **56**, 132 (1944)) and by Dr. H. T. Flint on "A Survey of Nuclear Field Theories" (*Proceedings*, **56**, 149 (1944)). At one meeting, exhibits and demonstrations illustrative of the radio instruction in the City and Guilds Electrical Engineering Department of the Imperial College were arranged and described by Professor C. L. Fortescue and his staff. The remaining meeting was for demonstrations by Dr. E. P. Harrison and Miss E. Hamilton-Smith, by Lord Rayleigh, and by Mr. A. Shilton (*Proceedings*, **56**, 31, 73 and 130 (1944)).

GUTHRIE LECTURE

The twenty-seventh Guthrie Lecture was delivered by Professor E. T. Whittaker on 18 May at the Royal Institution, the subject being "Chance, Freewill and Necessity in the Scientific Conception of the Universe" (*Proceedings*, **55**, 459 (1943)).

THOMAS YOUNG ORATION

The thirteenth Thomas Young Oration was delivered on 4 June 1943 at the Science Museum by Professor F. C. Bartlett, who took as his subject "Some Current Problems in Visual Function and Visual Perception" (*Proceedings*, **55**, 417 (1943)).

CHARLES CHREE MEDAL, PRIZE AND ADDRESS

The second award of the Charles Chree Medal and Prize was made by the Council to Professor (now Brigadier) B. F. J. Schonland in recognition of his researches on atmospheric electricity and the phenomena of the lightning stroke. The presentation was made at the Royal Institution on 16 July 1943, when Brigadier Schonland delivered the second Charles Chree Address, which was entitled "Thunderstorms and their Electrical Effects" (*Proceedings*, **55**, 445 (1943)).

DUDDELL MEDAL

The award of the nineteenth Duddell Medal to Dr. C. R. Burch was announced in last year's Report of Council. The presentation took place at the Imperial College on 9 April 1943, and was followed by an address by the Medallist, under the title "A Technologist looks at the Future", an abridged account of which was published later (*Nature*, **152**, 523 (6 November 1943)) and supplied to each member of the Society.

The Council awarded the twentieth Duddell Medal to Mr. John Guild for his invention, design and development of many optical instruments of outstanding merit. The presentation was made at the Imperial College on 17 December 1943, and a note on the Medallist and his work has been published in the *Proceedings* (frontispiece to vol. 56, January 1944).

PARSONS MEMORIAL LECTURE

In accordance with the terms governing the appointment of the Parsons Memorial Lecturers, the eighth annual lecture of the series was given under the auspices of the Physical Society. It was delivered at the Royal Institution on 15 October 1943 by the Right Hon. Lord Rayleigh, who took as his subject " Optical Topics, in part connected with Charles Parsons " ; it was later published *in extenso* (*Nature*, **152**, 676 (11 December 1943)), and copies were supplied to all members of the Society.

PROCEEDINGS

Volume **55** (1943) of the *Proceedings*, which was published in the usual six two-monthly parts, is only slightly smaller than the 1942 volume. A slight increase in the supply of paper made it possible to reprint one part of Volume **54**, no copies of which remained in stock, and to print more copies of Volume **55**. The charges for advertisements were increased during the year, the increases taking effect at the next renewal of each contract.

REPORTS ON PROGRESS IN PHYSICS

Volume **9** (1942–43) of the *Reports* was published in December, and has been in very great demand both inside and outside the Society, in this country, in the Empire and in the U.S.A. The use of two years' supply of paper for a single volume has made possible the printing of a larger number than in the case of previous volumes. The remaining stock of Volume **3** (1936) became exhausted towards the end of the year, and the sales of the other available volumes, **5** (1938) to **8** (1941), are still highly satisfactory.

Through the kindness of Miss M. M. Mitchell, Publications Manager of the American Institute of Physics, to whom the Council again records its thanks, American physicists still obtain copies of the *Reports* directly from the office of the Institute, 57 East 55th Street, New York, 22. The Editor of the *Reports*, Dr. W. B. Mann, as the guest of honour at the recent dinner of the American Physical Society in New York, gave oral expression of the Society's gratitude for this valuable co-operation.

REPRESENTATION ON OTHER BODIES

The following were the Society's representatives on other Bodies in 1943 :—

On the National Committee for Physics : Dr. Ezer Griffiths, Prof. N. F. Mott and Mr. R. S. Whipple.

On the National Committee for Scientific Radio : Mr. J. A. Ratcliffe and Sir Robert Watson Watt.

On the Committee of Management of Science Abstracts : Mr. J. H. Awbery, Prof. Allan Ferguson, Dr. W. Jevons and Dr. D. Owen.

On the Board of the Institute of Physics : Dr. W. Jevons and Prof. A. O. Rankine.

On the Council of the British Society for International Bibliography : Prof. L. C. Martin.

At the Inauguration of the English Scientific Films Association : Mr. W. Ashhurst and Mr. F. F. Renwick.

MEMBERSHIP

A limited edition of the List of Officers and Members, the only one issued since 1938, was printed in the latter part of the year. As is shown in the following table, the total membership increased during the year by about 6 per cent, the Fellowship increasing by 3·4 per cent and the Student Membership by 16·8 per cent. Although it is pleasant to record a considerable growth for the third year in succession and the passing of the thousand mark in the Fellowship and of the thirteenth hundred mark in the total membership, the figures are lower than might reasonably be expected after the remarkably fine record for 1942.

Roll of Membership		Hon. Fellows	Hon. Fellows, Optical Society	Ex-officio Fellows	Fellows	Student Members	Total
Totals, 31 Dec. 1942		10	3	4	998	232	1247
Changes during 1943	Newly elected	1			42 } 64	74	
	Transferred				22 }	22 }	
	Deceased	1			15 }	1 }	
	Resigned				8 } 30	3 } 35	
	Lapsed				6 }		
	Suspended				1 }	9 }	
	Net increase				34	39	73
Totals, 31 Dec. 1943		10	3	4	1032	271	1320

OBITUARY

The Council records with regret the deaths of the following Fellows :—Mr. R. M. Abraham, Mr. G. L. Addenbrooke, Mr. Rollo Appleyard, Mr. D. C. Challis, Major Leonard Darwin, Lord Hirst of Witton, Mr. A. S. Newman, Mr. R. W. Paul, Mr. F. F. Renwick, Dr. Alexander Russell (Past President), Mr. P. A. Scott-Iversen, Mr. W. O. Smith, Mr. H. Dennis Taylor, Mr. T. B. Vinycomb, Dr. F. J. W. Whipple, Professor P. Zeeman (Honorary Fellow), and the death of a Student Member, Mr. D. H. T. Gant.

COLOUR GROUP

The third Annual General Meeting of the Group was held at the Science Museum on 3 March 1943, when Mr. J. Guild was elected as Chairman, Mr. H. D. Murray was re-elected as Honorary Secretary and the Committee for 1943–44 was elected.

Four Science Meetings of the Group were held : on 3 March and 9 September at the Science Museum, and on 12 May and 10 November at the Lighting Service Bureau of the Electric Lamp Manufacturers' Association, the last of these being held jointly with the Technical Section of the Paper Makers' Association. The subjects of the Meetings were " The Significance and Limitations of the C.I.E. Standard Observer Tables " (address by Mr. J. Guild), " Sixty Years of Colorimetry " (lecture by Mr. G. S. Fawcett, *Proceedings*, **56**, 8 (1944)), " A Review of the Theory of Colour Photography " (lecture by Mr. J. B. Reid), " Colour Measurement for Control and Research in Paper-making " (paper by Mr. S. R. H. Edge and Miss H. M. McKenzie, *Proc. Tech. Sec. P.M.A.* **24**, 201 (1943)). The attendances averaged about 40.

The work of the Sub-Committees on Colour Blindness in Industry and Colour Terminology continued throughout the year.

The membership of the Group increased slightly during the year, and on 31 December was as follows :

Members of the Physical Society	69
Members of other participating bodies	70
Members of six firms subscribing for sustaining membership	15
Other members	3
Total	157

OPTICAL GROUP

At the second Annual General Meeting of the Group, which was held at the Imperial College on 16 April 1943, Professor A. O. Rankine and Professor L. C. Martin were re-elected as Chairman and Honorary Secretary, respectively, and the Committee for 1943–44 was elected.

During the year five Science Meetings of the Group were held: four of them were at the Imperial College on 22 January, 16 April, 18 June and 19 November, the subjects discussed being "The Resolution of Optical Images" (papers by Prof. L. C. Martin, Mr. H. H. Hopkins and Dr. K. B. E. Merling, *Proceedings*, **55**, 104 and 116 (1943); **56**, 321 (1944)), "The Limit of Visual Resolution" (paper by Mr. E. W. H. Selwyn, *Proceedings*, **56**, 286 (1944)), "The Designing of Systems with Non-spherical Surfaces" (discussion opened by Instr.-Capt. T. Y. Baker, *Proceedings*, **56**, 481 (1944)), "Optical Aids to Teaching" (lecture by Mr. H. E. Dance, *School Science Review*, **25**, 172 (1944)) and "The Measurement of Aberrations, with special reference to Photographic Lenses" (discussion opened by Mr. T. Smith, *Proceedings*, **56**, 277 (1944)). A meeting was held at the National Institute for Medical Research, Hampstead, on 17 September for a demonstration of the electron microscope and other apparatus. Members of the Group joined the Manchester and District Branch of the Institute of Physics on 20 March for a demonstration of the electron microscope at Shirley Institute, Didsbury.

The membership of the Group increased by 33 during the year, and on 31 December was as follows:

Members of the Physical Society	133
Members of other participating bodies	111
Members of twenty-two firms subscribing for sustaining membership	83
Other members	9
Total	336

REPORT OF THE HONORARY TREASURER FOR THE YEAR ENDED 31 DECEMBER 1943

During 1943 income exceeded expenditure by about £578, as compared with £649 in the previous year, the total expenditure (£4485) being roughly £444 more than in 1942 and the total receipts (£5063) being £373 more. The additional expenditure was mainly on publications: there was a general increase in printers' charges, we published a new volume of *Reports on Progress in Physics* (no volume of which was printed in 1942), and we reprinted one number of Vol. **54** of the *Proceedings*, which was out of print. It is satisfactory to note, however, that the claim on the Society for the cost of *Science Abstracts* was considerably less and the return slightly better than in 1942, and that the receipts from annual subscriptions of Fellows and Student Members and from sales of publications were all higher.

The Society's holding of £500 of India 3½% Stock was redeemed at par at the beginning of the year, this being the only change in the Society's investments. The total market value of the remaining investments at the end of 1943 was about £127 less than a year earlier.

A further publications grant of £200 by the Royal Society from the Rockefeller Foundation Gift is gratefully acknowledged. In due course this will be expended on the reprinting of further numbers of the 1942 *Proceeedings*, to make up the deficiency to which attention was drawn in last year's reports of the Council and the Treasurer.

(Signed) CLIFFORD C. PATERSON,
Honorary Treasurer.

26 *April* 1944.

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 1943

1942 £	Expenditure	£ s. d.	£ s. d.
	To		
320	"Science Abstracts"		265 15 1
	Normal Publications:		
1513	"Proceedings"	1687 6 1	
47	Agenda Papers and Notices	66 15 0	
834	"Reports on Progress in Physics"	1119 7 7	
			2873 8 8
254	Postage on Publications and General Correspondence		266 17 10
64	Expenses at Meetings		53 4 7
72	Honoraria to Special Lecturers		40 0 0
	Administration Expenses:		
850	Secretarial and Clerical Assistance and Office Expenses	933 13 9	
87	1 Lowther Gardens (including Air Raid Precautions)	52 7 6	
			986 1 3
649	*Balance, being excess of Income over Expenditure, carried forward to Accumulated Fund*		577 14 3
£4690			£5063 1 8

1942 £	Income	£ s. d.	£ s. d.
	By		
	Subscriptions:		
57	Entrance Fees	38 17 0	
1757	Fellows	1920 3 3	
123	Student Members	140 3 6	
24	Colour Group	25 2 6	
57	Optical Group	58 4 0	
114	For "Science Abstracts" and Advance Proofs	139 10 1	
			2322 0 4
	Sales:		
764	"Proceedings"	884 6 2	
863	"Reports on Progress in Physics"	902 17 5	
105	Special Publications	133 14 0	
			1920 17 7
332	Advertisements in "Proceedings"		306 18 6
284	Dividends from Investments		283 5 1
10	Transfer from Life Composition Fund of amounts paid by Fellows now deceased		30 0 0
200	Publications Grant by the Royal Society from the Rockefeller Foundation Gift		200 0 0
£4690			£5063 1 8

BALANCE SHEET AS ON 31 DECEMBER 1943

LIABILITIES	£ s. d.	£ s. d.
Sundry Creditors		217 18 1
Life Compositions:		
As on 31 December 1942	1534 0 0	
Add Payments during year	105 0 0	
	1639 0 0	
Less Transfer to Income and Expenditure Account	30 0 0	
		1609 0 0
Subscriptions received in advance:		
Members	23 1 0	
Publications	176 11 0	
		199 12 0
SPECIAL FUNDS:		
W. F. Stanley Trust Fund	259 0 0	
Duddell Memorial Trust Fund	337 14 9	
"Progress Reports" Reserve Account	83 1 0	
Herbert Spencer Legacy	239 7 6	
Charles Chree Medal and Prize Fund:	1880 5 10	
		2799 9 1
GENERAL FUND:		
As on 31 December 1942	4995 12 3	
Add Balance of Income and Expenditure Account	577 14 3	
,, Profit on India Stock redemption	88 0 0	
		5661 6 6
		£10487 5 8

ASSETS	£ s. d.	£ s. d.
Investments at Market Value on 31 December 1939:		
W. F. Stanley Trust Fund	259 0 0	
Duddell Memorial Fund	374 0 0	
Charles Chree Medal and Prize Fund	1866 10 0	
General Fund	5505 10 0	
		8005 0 0
(Market Value on 31 December 1943: £9173)		
Dividends due from Investments		50 4 7
Inland Revenue—Income Tax recoverable for 1942 and 1943		109 19 1
Subscriptions due		40 16 10
Sundry Debtors		377 16 6
Stock of Paper and Binding Material		67 9 4
Cash at Bank	484 16 5	
,, *in Post Office Savings Bank Account*	1351 2 11	
		1835 19 4
		£10487 5 8

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. We have verified the bank balances and the Investments. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs according to the best of our information and the explanations given to us and as shown by the books of the Society.

SPENCER HOUSE, SOUTH PLACE, E.C. 2.
21st April 1944.

KNOX, CROPPER & Co.,
Chartered Accountants.

LIFE COMPOSITION FUND ON 31 DECEMBER 1943

	£	s.	d.
25 Fellows paid £10	250	0	0
1 Fellow paid £10 10s.	10	10	0
1 Fellow paid £15	15	0	0
14 Fellows paid £21	294	0	0
33 Fellows paid £31 10s.	1039	10	0
	£1609	0	0

SPECIAL FUNDS

W. F. STANLEY TRUST FUND

	£	s.	d.		£	s.
Carried to Balance Sheet	259	0	0	£300 Southern Railway Preferred Ordinary Stock	199	0
				£442 Southern Railway Deferred Ordinary Stock	60	0
	£259	0	0		£259	0

DUDDELL MEMORIAL TRUST FUND

Capital

	£	s.	d.		£	s.
Carried to Balance Sheet	374	0	0	£400 3½% War Loan Inscribed "B" Account	374	0

Revenue

	£	s.	d.		£	s.
Balance on 31 December 1942	4	18	9	Interest on War Loan	14	0
Honoraria	40	0	0	Balance carried to Balance Sheet	36	5
Medals and Certificates	5	6	6			
	£50	5	3		£50	5

"PROGRESS REPORTS" RESERVE ACCOUNT

	£	s.	d.		£	s.
Balance carried to Balance Sheet	83	1	0	Balance on 31 December 1942	83	1

HERBERT SPENCER LEGACY

	£	s.	d.		£	s.
Balance carried to Balance Sheet	239	7	6	Balance on 31 December 1942	239	7

CHARLES CHREE MEDAL AND PRIZE FUND

Capital

	£	s.	d.		£	s.
Balance carried to Balance Sheet	1865	16	4	Balance on 31 December 1942	1865	16

Revenue

	£	s.	d.		£	s.
Charles Chree Prize	131	5	0	Balance on 31 December 1942	83	12
Medal and Certificate	6	15	6	Interest on Investments	68	17
Balance carried to Balance Sheet	14	9	6			
	£152	10	0		£152	10

JOHN GUILD, TWENTIETH DUDDELL MEDALLIST

J. Guild was born 16 November 1889 in the moorland village of Fauldhouse, Linlithgowshire. He was educated at Alan Glen's School, Glasgow, and at the Imperial College, London, where, first as a student and then as demonstrator in the senior physics laboratory, he spent five years, of which the last two were primarily occupied, with Prof. S. W. J. Smith, in investigations of the thermo-magnetic properties of carbon steels. He joined the staff of the National Physical Laboratory in April 1914.

The twentieth Duddell Medal has been awarded to him in recognition of his design of a number of optical and physical instruments of outstanding merit. All his instruments are noteworthy for their sound mechanical as well as optical design, and for the scrupulous avoidance of all elaborations that would not contribute to their final precision and accuracy. The best known, and the most important, are his spectrophotometer (1924), the trichromatic colorimeter (1925) and the absolute radiometer (1937). Others are a spherometer of precision (1917), a very accurate angle comparator for the goniometry of prisms (1923), a flicker photometer (1923), vector colorimeter (1925), an improved goniometric spectrometer (1926, in collaboration with the late Mr. George Watts), a compensated thermopile (1931) and an instrument for evaluating the surface finish of metals (1940).

JOHN GUILD,
Twentieth Duddell Medallist.
(See back of plate.)

[*Frontispiece*